Ex Ante Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM

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We estimate ex ante expected returns for a sample of S&P 500 firms over the period 1983-1998. The ex ante estimates show a better overall fit with the domestic version of the single-factor CAPM than with the global version, but the difference is small. This finding has no trend in time and is consistent across groups formed on the basis of relative foreign sales. The findings suggest that for estimating the cost of equity, the choice between the domestic and global CAPM may not be a material issue for many large US firms.

The estimation of a firm's cost of equity capital remains one of the most critical and challenging issues faced by financial managers, analysts, and academicians. Although theory provides several broad approaches, recent survey evidence reports that among large US firms and investors, the capital asset pricing model (CAPM) is by far the most widely used model.

Among the variety of decisions to be made in implementing the CAPM is the choice between a domestic or global index for the market portfolio. Although theory suggests that using a domestic market index is appropriate only for an asset traded in a closed, national market, empirical research has thus far failed to establish whether a global or domestic pricing model performs better with US stocks.

We study the choice between the global and domestic CAPM by examining which of the two models provides the better fit with a sample of *ex ante* expected equity return estimates for large US companies. In contrast to many prior studies that use realized returns, we estimate implied expected returns based on the theory's call for a forward looking measure. The question we ask is whether the domestic or the global version of the single-factor CAPM provides the better fit with the dispersion of the *ex ante* expected return estimates for a sample of S&P 500 equities. Our study period covers 1983 to 1998.

We find that the domestic US CAPM fits the *ex ante* expected return estimates better than does the global CAPM. This result shows no trend over time. We also find that except for a few years in the early 1990s, the better fit of the domestic CAPM holds consistently across subsamples formed on the basis of the relative levels of the firms' foreign sales. However, the difference in fit of the two versions of the CAPM is small.

We also find a positive and significant empirical relation between *ex ante* risk premium estimates and systematic risk estimates. Moreover, we find that the *ex ante* risk premium estimates for

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broad industry groups have a high correlation with the corresponding Fama-French (1997) estimates from the CAPM, but not with the estimates from their three-factor model.

The study's practical implications are based on the widespread use of the CAPM in cost of capital estimation by large US firms and investors, where the traditional use of the S&P 500 index as the "market portfolio" continues to be the standard. Our findings support the use of the domestic CAPM to estimate the cost of equity of large US firms. However, finding a relatively small difference in the overall fit of the two CAPM versions suggests that the choice between applying the domestic CAPM and the global CAPM may not be a critical issue for many large US firms.

The paper is organized as follows. Section I reviews related literature. This review includes the domestic and global versions of the single-factor CAPM and why the two models are theoretically likely to result in different expected rates of return for a given asset. Section II discusses the methodology and data for the empirical analysis. Section III reports the results of the empirical comparison of the *ex ante* expected return estimates with the estimates of the two CAPM versions and with corresponding measures of risk. Section IV provides a brief summary and conclusion.

I. Review of Related Literature

Recent survey evidence (Bruner, Eades, Harris, and Higgins, 1998) and Graham and Harvey, 2001) reports that the capital asset pricing model (CAPM) is widely used by large US firms and investors. The CAPM also continues to have wide popularity in academic textbooks and applied articles (e.g., Kaplan and Peterson, 1998 and Ruback, 2002).

These applications use the traditional domestic CAPM, $k_i = r_f + \beta_{iD}[k_{MD} - r_f]$; where k_i is the equilibrium expected rate of return for asset i; r_f is the risk-free rate; β_{iD} is the beta of asset i against the domestic market portfolio returns; k_{MD} is the equilibrium required rate of return on the domestic market portfolio; and $k_{MD} - r_f$ is the risk premium on the domestic market portfolio.

A. Global CAPM and Domestic CAPM

Stehle (1977) and Stulz (1995a, 1995b, 1999) argue that using a domestic market index is only appropriate for an asset traded in a closed, national financial market. Although equilibrium international asset pricing models are multifactor in general, if the purchasing power parity (PPP) condition holds, then the single-factor CAPM equation can be adapted to a international context for assets in the global market portfolio, as discussed in Stulz (1995c). We emphasize the difference between the domestic and global CAPMs by Equation (1).

$$k_i = r_f + \beta_{iG}[k_{MG} - r_f] \tag{1}$$

where k_i is the equilibrium expected rate of return for asset i in a specific pricing currency, r_f is the nominal rate of return on an asset that is risk-free and denominated in the pricing currency, β_{iG} is the beta of asset i's returns against the unhedged global market index returns, with returns computed in the pricing currency, k_{MG} is the equilibrium required rate of return in the pricing currency on the unhedged global market portfolio, and $k_{MG} - r_f$ is the risk premium on the unhedged global market portfolio. As in Grauer, Litzenberger, and Stehle (1976), under the assumption of logarithmic utility the global CAPM in Equation (1) holds with any numeraire currency. Ross and Walsh (1983) show that when log utility is not assumed, Equation (1) holds for at most one currency. We assume that currency is the US dollar.

Karolyi and Stulz (2003) point out that only in the special case in which β_{iG} equals $\beta_{iD}\beta_{DG}$ does the global CAPM result in the same expected return as the domestic CAPM, i.e., when an asset's global beta is equal to its domestic beta times the global beta of the domestic market portfolio. Generally, this condition does not hold. Instead, when β_{iG} is greater than $\beta_{iD}\beta_{DG}$, the domestic CAPM is likely to underestimate the asset's expected return relative to the global CAPM, because there is more global systematic risk in the asset's returns than is accounted for by the domestic market index. Similarly, when β_{iG} is less than $\beta_{iD}\beta_{DG}$, the domestic CAPM is likely to overestimate the asset's expected return relative to the global CAPM, because the asset has less global systematic risk in its returns than is accounted for by the domestic market index.

Stehle (1977) reports empirical support for the global CAPM over the domestic version in realized returns for US stocks from 1956 to 1975. Harvey's (1991) study provides further empirical support of global pricing of US equities. Black (1993) asserts that the issue of whether a global or domestic index should be used in CAPM applications is not yet settled. However, given the significant globalization of the world financial markets, Stulz (1995a, 1995b, 1999) advocates the use of the global version. In contrast to Stehle's (1977) findings, Griffin (2002) reports that for the period between 1981 and 1995, a three-factor (Fama-French) domestic model had lower pricing errors for US firms than did an analogous three-factor world version. His results indicate that a domestic pricing model is a better fit with realized return data than a global pricing model.

Campbell's (1996) empirical analysis of a multifactor domestic pricing model finds that the single-factor domestic "... CAPM is a good approximate model for stock and bond prices," since the additional factors (returns to human capital and changes in expected market return) are highly correlated with the market index returns. Ng (2003) reaches a similar conclusion in the context of the global CAPM, with the additional factors of FX risk and shifts in both expected market returns and expected FX changes. Therefore, we only examine the two single-factor CAPMs. Griffin (2002) does not report results on domestic compared to world single-factor (market index) models. However, in private correspondence after our study was completed, Griffin reported to us that the domestic version of the single-factor model had lower pricing errors than did the world model.

For large US companies like those in the S&P 500, there are arguments why choosing a domestic or a global index for CAPM applications could be a non-issue. One argument is that a US index will closely track a global index, especially as markets have become more integrated and since the market value of US stocks is a substantial proportion of the market value of a global index. However, the data show that the beta of the S&P 500 compared to the MSCI World Index has been substantially less than one in the past. Another argument is that S&P 500 companies are often global in scope, which makes the S&P 500 something of a global index in its own right. However, Jacquillat and Solnik (1978) and Christophe and McEnally (2000) report evidence that a portfolio of US multinationals is an ineffective vehicle for international diversification. Even if the choice between a global and a domestic index does not matter much for large US firms in general, it might make a difference for US firms with very high (or low) levels of foreign involvement. However, this empirical question is unanswered. Older studies by Hughes, Logue, and Sweeney (1975) and Agmon and Lessard (1977) suggest this possibility, reporting that global (domestic) betas increased (decreased) with the level of US firms' foreign-to-total sales ratio. However, more recent results in Diermeier and Solnik (2001) do not find this effect to be strong for US firms.

A domestic index could be the preferred benchmark for US investors with a significant "home bias", as in the Cooper and Kaplanis (2000) model of partially integrated world markets. However, we do not know whether the popularity of the domestic CAPM among US firms is for this reason.

B. *Ex Ante* Expected Return Estimates

Empirical tests comparing global to domestic pricing models usually rely on realized returns. However, Elton (1999) points out that *ex ante* estimates of expected returns are more desirable. We obtain *ex ante* expected return estimates through analysts' growth forecasts and discounted cash flow (DCF) models, as in a number of prior studies, including Claus and Thomas (2001), Fama and French (2002), and others discussed below.

In contrast to research that uses realized returns, almost all of the studies using *ex ante* expected return estimates find an empirical relation between expected return and beta risk, despite differences in approaches and time periods. For example, using the constant dividend growth model, Harris and Marston (1992) and Marston and Harris (1993) report a significant relation between *ex ante* expected return estimates and (domestic) betas for a sample of US stocks in the 1982-1987 period. At the same time they confirm the findings of previous empirical studies of no significant relation between realized returns and betas.

When they apply a DCF model to 51 highly leveraged transactions (mostly management buyouts) in the period 1980-1989, Kaplan and Ruback (1995) find that implied costs of capital estimates are related to beta but not to the size and book-to-market factors. Using IBES forecasts, Gordon and Gordon (1997) and Gode and Mohanram (2003) also observe a significant relation between *ex ante* expected equity return estimates and domestic US betas. Gordon and Gordon use a finite horizon dividend discount model and the time period 1985-1991. Gode and Mohanram use the Ohlson-Juettner (2000) valuation model for the period 1984-1998. Also, Brav, Lehavy, and Michaely (2003) find a positive empirical association between analysts' direct return forecasts and beta for US stocks, but not between the return forecasts and the size and book-to-market factors.

The results of Gebhardt, Lee, and Swaminathan (2001) provide the only exception that we know of to a positive empirical relation between *ex ante* expected return and beta risk estimates. Their study, which uses IBES forecasts and a clean-surplus residual income valuation model, reports no significant association between their *ex ante* expected return estimates and domestic betas for a sample of US stocks from the period 1979-1995.

There is some controversy about IBES forecasts. La Porta (1996) asserts that analysts' growth forecasts tend to be too extreme, but Lee, Myers, and Swaminathan (1999) find that IBES forecasts improve their intrinsic value estimates over forecasts based on a time series model.

II. Methodology and Data

In this section, we discuss our approach for estimating *ex ante* expected returns using the constant dividend growth model and the consensus of financial analysts' five-year earnings growth forecasts available through IBES. In addition, we explain our criteria for comparing the global and domestic CAPMs.

A. *Ex Ante* Expected Return Estimation

For each month from January 1983 through August 1998, we calculate an *ex ante* expected return estimate for each dividend-paying US stock in the S&P 500 index for which data are available. We eliminate a firm in a given month if there are fewer than three analysts' forecasts, if the standard deviation around the mean forecast exceeds 20%, or if there are not sufficient historical returns for the prior 60 months to perform beta estimations. The analysis comprises 65,154 expected return estimates for the months from January 1983 to August 1998. We obtain dividend and other firm-specific information from the Compustat files.

We estimate *ex ante* expected rates of return by using the constant dividend growth model.

$$k_i^a = \frac{D_{1i}}{P_{0i}} + g_i \tag{2}$$

where k_i^a is the *ex ante* expected rate of return (cost of equity) estimate for company i, D_{1i} is the dividend per share expected to be received at time 1, P_{0i} is the current price per share, and g_i the expected long term growth rate in dividends per share, which we assume is equal to the consensus of the analysts' growth forecasts. See Timme and Eisemann (1989) for a review of the benefits of analysts' forecasts over historical growth estimates.

We recognize that our study, like any study of asset pricing relations, is a joint "test" of the underlying model and the empirical constructs used. Therefore, like other studies, we cannot conclude whether rejection is due to failure of the model or of the empirical proxies. With this standard caveat, our method for estimating *ex ante* expected returns, which uses IBES growth forecasts and the dividend growth model, has several strengths. First and foremost, theory suggests that measures of return should be those that investors expect to prevail over some future time horizon. Although many empirical tests rely on realized returns, there is no necessary relation between the investors' expected returns suggested by theory and subsequently realized returns, except under strong assumptions.

Second, as noted earlier, and in contrast to studies that use realized returns, the results of studies that use *ex ante* expected return estimates are robust across time periods and DCF models in finding a positive empirical relation between expected return and systematic risk. Since we find that our *ex ante* expected return estimates behave similarly to those of other empirical studies, we believe that our *ex ante* estimates are representative.

Third, our approach should not bias the outcome of this study toward one version of the CAPM over the other. That is, there is no reason to think that the relative fit of the two CAPM versions with the *ex ante* expected return estimates depends on a particular DCF valuation model or source of growth forecasts.

Finally, given the widespread use of the CAPM, the conflicting empirical results on the impact of using a domestic or global index warrants additional study using a variety of approaches. Furthermore, additional empirical results on the constant growth model, given its longstanding history and continued use, could be useful.

B. Global CAPM Compared to Domestic CAPM

To use either the global or the domestic CAPM to estimate a firm's cost of equity, we use a time-varying approach to estimate betas and market risk premia. We estimate the firms' equity betas for a particular month with monthly excess returns (the stock return minus 20-year Treasury bond (T-bond) return) for five years prior to the month for which we estimate the cost of equity. We estimate equity betas for all companies by using an ordinary least squares (OLS) of excess stock returns on excess market index returns. We obtain monthly stock returns in US dollars from January 1978 through August 1998 from the CRSP files. We obtain T-bond returns from the website of the Federal Reserve Bank of St. Louis. We use the S&P 500 Index as the domestic US index. (We also use the CRSP Value-Weighted Index in a robustness check.) We use the Morgan Stanley Capital International (MSCI) World Index with gross dividend reinvestment as the global market index. The monthly data for the global index is from the website of MSCI: www.mscidata.com. This index is unhedged and thus, when reported in US dollars, reflects exchange rate changes in currencies against the US dollar.

The question we investigate is which of the two CAPM versions, if we assume that version is the "correct" model, has less variation in its fit with the *ex ante* expected return estimates for the individual firms. To implement this investigation, we "back out" the estimated *market* risk premia (domestic and global) for each month from the *ex ante* expected returns of the individual stocks. To do so, for a given month, we first turn each stock's *ex ante* expected return estimate into an *ex ante* risk premium estimate by subtracting the yield on the 20-year T-bond. Then we aggregate the stocks' *ex ante* risk premia estimates with value weighting, producing an *ex ante* portfolio risk premium estimate for the month. For the domestic CAPM, we value-weight the firms' domestic beta estimates into a portfolio domestic beta estimate for the month. Since the portfolio risk premium should be equal to the portfolio beta times the market risk premium, the domestic market risk premium estimate for the month is found implicitly by dividing the portfolio risk premium estimate by the portfolio domestic beta estimate. For example, if the value-weighted portfolio of eligible stocks has an *ex ante* risk premium estimate of 6% and a domestic beta estimate of 0.9, then the implicit domestic market risk premium estimate (for that month) is 6% divided by 0.9, which equals 6.67%. To ensure a fair comparison between the domestic CAPM (DCAPM) and the global CAPM (GCAPM), we use an analogous procedure (each month) to estimate the implicit global market risk premium from the *ex ante* portfolio risk premium estimate and the portfolio's global beta estimate. In other words, we estimate the domestic market risk premium by assuming that the domestic CAPM is valid for the average stock, and estimate the global market risk premium by assuming that the global CAPM is valid for the average stock. By design, this approach implies that the average difference between the model estimates and the *ex ante* estimates is zero for both CAPM versions.

We then investigate how much variation exists for individual firms between the *ex ante* risk premium estimates and the corresponding estimates of each of the two CAPM versions. For each month from January 1983 until August 1998, we analyze each available stock as follows. We begin by using the stock's domestic beta and the domestic market risk premium estimates to find the firm's risk premium estimate under the DCAPM. We also estimate the stock's risk premium under the GCAPM with the stock's global beta and the global market risk premium estimates. We then compare the *ex ante* risk premium estimate for the stock with the risk premium estimates of both CAPM versions.

For a given stock and month, there will generally be differences between all three risk premium estimates. For example, a stock in June 1989 might have an *ex ante* risk premium estimate of 5%, a DCAPM estimate of 4%, and a GCAPM estimate of 7%. In this hypothetical example, the DCAPM would be considered as the better fit because it provides a risk premium estimate that is closer to the *ex ante* estimate.

We use three metrics to assess which of the two CAPM versions has the better overall fit with the *ex ante* estimates. First, we examine the average of the absolute differences between the model estimates and the *ex ante* estimates. We decide that the model with the lower overall average of absolute differences across all observations for the individual firms is the better-fitting model for this metric. Second, we determine the percentage of the *ex ante* estimates for which the DCAPM provides a closer fit than the GCAPM. In the third metric, we compare the results of cross-sectional OLS of *ex ante* risk premium estimates for the individual stocks against both the estimated domestic betas and the estimated global betas. Whichever regression has the higher r-squared indicates the better-fitting CAPM version with this approach. We also examine the regression results for relative consistency with the theory: an intercept of zero and a positive slope.

Further, we investigate whether the fit of the *ex ante* estimates with those of the two CAPM versions is related to the ratio of foreign sales to total sales, which we use here as a proxy for international exposure. Although we understand that the relative level of foreign sales does not completely capture a firm's international exposure, its use is standard in many empirical studies, including Fatemi (1984), Jorion (1990), Miller and Reuer (1998), and Doidge, Griffin, and Williamson (2002), who contend that a good rationale for using relative foreign sales as a proxy for international exposure is the high correlation with other measures of firms' international operations.

Of the 489 firms used in the study, 253 firms have a reported foreign sales entry (including 76 firms reporting zero foreign sales) for the period 1994 to 1998. The overall average ratio of foreign to total sales is approximately 20% for the 253 firms. Using the eligibility criteria discussed above, we use the data for the 253 firms from 1983 to 1998 to construct a subsample of 36,580 observations (out of the 65,154 total observations), an average of about 194 firms per month. Of these observations, 11,053 involve a firm reporting zero foreign sales during 1994-1998, an average of about 59 firms per month. We divide the remaining observations, involving firms reporting non-zero foreign sales during 1994-1998, into three equal-sized groups of 8,509 observations based on the magnitude of relative foreign sales. Each group had an average of about 45 firms per month. The high foreign sales group has an average ratio of foreign to total sales of 53%, and the medium and low groups had ratios of 27% and 7%, respectively.

III. Results

This section describes in detail the results of the study, as reported in the tables.

A. Summary of Risk Premium Differences for DCAPM and GCAPM

Table I summarizes the average absolute differences between the *ex ante* risk premium estimates and the DCAPM and GCAPM estimates, and the percentage of instances in which the *ex ante* estimates are closer to the DCAPM estimate than to the GCAPM estimate. For all the observations in the sample, over all years from 1983 through 1998, the DCAPM's estimated expected return differs in absolute terms from the corresponding *ex ante* estimate by an average of 0.027, or 270 basis points. The GCAPM's estimated expected return differs in absolute terms from the corresponding *ex ante* estimate by an average of 0.029, or 290 basis points.

For every year except 1992, the average absolute difference between the DCAPM estimates and the *ex ante* estimates is less than or equal to the average absolute difference between the GCAPM estimates and the *ex ante* estimates. Based on the average absolute difference criterion, we find that the DCAPM has a better overall fit with the *ex ante* risk premium estimates.

However, the overall margin of difference, 270 basis points compared to 290 basis points, is not dramatic. The difference is the closest in the early 1990s. In contrast, in the 1980s and late 1990s, the DCAPM is the better fit by a wider margin. In a robustness check, we obtain

Table I. Summary of Risk Premium Differences For DCAPM and GCAPM

The columns show, respectively, the average number of firms per month (#Firms), the value-weighted averages of the estimated *ex ante* risk premia (*Ex Ante*), average domestic beta estimates (β_{iD}), the average domestic market risk premium estimates (RP_D), the average absolute differences between the *ex ante* estimates and those of the DCAPM (*Ex*-D), the average global beta estimates (β_{iG}), the average global market risk premium estimates (RP_G), the average absolute differences between the *ex ante* estimates and those of the GCAPM (*Ex*-G), and the percentage of cases in which the *ex ante* estimate is closer to the DCAPM estimate than to GCAPM estimate (%DCAPM Closer). The numbers in parenthesis are corresponding *t*-statistics.

Year	#Firms	*Ex Ante*	β_{iD}	RP_D	*Ex*-D	β_{iG}	RP_G	*Ex*-G	%DCAPM Closer
1983	285	0.066	0.883	0.075	0.030	0.864	0.077	0.031	0.573(8.489)***
1984	300	0.053	0.915	0.058	0.026	0.897	0.059	0.027	0.581(9.777)***
1985	314	0.057	0.925	0.062	0.026	0.915	0.062	0.028	0.561(7.524)***
1986	320	0.074	0.985	0.075	0.028	0.890	0.084	0.030	0.580(9.931)***
1987	327	0.061	1.024	0.060	0.024	0.941	0.065	0.027	0.618(14.76)***
1988	335	0.064	1.000	0.064	0.024	0.969	0.066	0.026	0.589(11.28)***
1989	352	0.066	0.982	0.067	0.023	0.890	0.073	0.025	0.601(13.08)***
1990	357	0.071	0.972	0.073	0.025	0.797	0.089	0.026	0.531(4.108)***
1991	363	0.075	0.976	0.077	0.027	0.723	0.104	0.027	0.482(-2.409)**
1992	370	0.078	0.990	0.079	0.030	0.723	0.109	0.028	0.440(-8.002)***
1993	374	0.082	1.018	0.080	0.029	0.576	0.142	0.029	0.490(-1.299)
1994	375	0.073	1.038	0.070	0.025	0.576	0.126	0.026	0.515(2.012)**
1995	370	0.077	1.039	0.074	0.028	0.579	0.133	0.031	0.538(5.118)***
1996	379	0.078	1.008	0.077	0.027	0.604	0.129	0.035	0.632(17.83)***
1997	383	0.082	1.005	0.081	0.029	0.650	0.127	0.037	0.616(15.73)***
1998	388	0.092	1.010	0.091	0.031	0.793	0.116	0.035	0.575(7.826)***
Avg.	349	0.072	0.986	0.073	0.027	0.774	0.097	0.029	0.556(28.57)***

***Significant at the 0.01 level.
**Significant at the 0.05 level.

similar results (not reported here) when we use the CRSP Value-Weighted Index instead of the S&P 500 Index for the domestic US market portfolio.

We make two observations about the magnitudes of the market risk premium estimates. First, the global market risk premium estimates are higher than the local US market risk premium estimates. Although this observation may seem counterintuitive, it is a logical consequence of the fact that the global beta of the US market has historically been less than one. (See, for example, Karolyi and Stulz, 2003). Our second observation is that market risk premium estimates are higher than those reported in studies by Claus and Thomas (2001) and Fama and French (2002), but have a similar magnitude to that observed by Kaplan and Ruback (1995) and to the long-term unconditional estimates of Constantinides (2002). Regardless, these estimates should not bias the results in favor of one CAPM version over the other.

When we examine the percentage analysis reported in Table I, we see that with the exception of the three consecutive years from 1991 through 1993, in the majority of the cases the *ex ante* risk premium estimate is closer to the DCAPM estimate than to the GCAPM estimate. Overall, the *ex ante* estimates are closer to the DCAPM estimate 56% of the time. Given the large sample, this percentage is significant in a statistical sense.

B. Cross-Section Regressions On Systematic Risk

Table II reports the results of the cross-section regression of the firms' *ex ante* risk premium estimates on the beta estimates. Overall, the cross-section regressions provide further evidence that consistently throughout the time period 1983-1998, the *ex ante* estimates have a better fit with those of the DCAPM than with the GCAPM. Table II shows that the r-squares of all of the regressions are higher when we use the domestic beta as the independent variable than with the global beta. Moreover, the DCAPM regression results are consistently better aligned with the theory. The regression intercepts are closer to zero for the DCAPM than for the GCAPM, and the *t*-statistics on the slope coefficients are more significant for the DCAPM than for the GCAPM. These observations apply to the entire period, to all four individual sub-periods, and to each of the 16 years covered in the study.

The findings of significant, positive slope coefficients in each of the 16 years' cross-section regressions appear to strongly confirm the basic asset pricing theory prediction that expected returns are positively related to beta risk. We note that we are using individual stock parameters, not portfolios, and we use no control variables in the cross-section regressions. However, the positive regression intercepts suggest the possible omission of risk factor(s) or systematic optimism in the analysts' growth forecasts. Further exploration of this issue is beyond the scope of this study and is a topic for future research.

Together, Tables I and II lead us to conclude that using all three metrics (average absolute differences, percentage of cases with the better fit, and cross-section regression results), the domestic CAPM fits the dispersion of *ex ante* risk premium estimates better than does the global CAPM. This finding surprised us, in light of the continuing integration of world financial markets and international diversification by investors. However, this finding is consistent with the Cooper and Kaplanis (2000) model of partially segmented global capital markets and home bias.

C. Impact of Foreign Sales

We hypothesize that the global CAPM provides the better fit for companies with a relatively higher level of foreign sales, or that at least we observe a trend toward this relation over time. Table III shows this expectation is not the case. Only in the 1990-1994 period the GCAPM is the better fit for the high and medium foreign sales groups, and the DCAPM is the better fit for the low and zero foreign sales groups. However, after 1994, the pattern is generally the same for all four foreign sales groups, and there is no longer a better fit by the GCAPM for firms in the high and medium relative foreign sales groups.

Looking at all the years together, the average absolute differences between the *ex ante* risk premium estimates for the individual stocks and those of the two CAPM versions are about the same for each foreign sales level group, and the DCAPM estimates are slightly closer to the *ex ante* estimates in all four groups. Thus, we conclude that the relative level of foreign sales does not indicate when the *ex ante* expected returns are more closely related to the GCAPM than the DCAPM, except possibly during times when the US and global economies are not in sync.

D. Risk Premium Estimates and Differences by Industry

Given the potential for measurement error at the company level, there are benefits from looking at industry aggregates. Table IV breaks down the full-period risk premium estimates by broad industry groups. The results weight each firm in the industry equally. We obtain similar results

Table II. Cross-Section Regressions

The table presents the results of cross-section regressions of *ex ante* risk premium estimates and systematic risk estimates for individual firms. We use ordinary least squares, with *ex ante* risk premium estimates as the dependent variable and firm beta against indicated market portfolio as independent variable. The numbers in parenthesis are the corresponding *t*-statistics.

	Versus Domestic Beta			Versus Global Beta			
Year	**Intercept**	**Slope**	**R-Sq**	**Intercept**	**Slope**	**R-Sq**	**#Obs**
1998	0.062 (35.07)***	0.025 (13.73)***	0.065	0.065 (38.39)***	0.025 (12.45)***	0.054	2718
1997	0.059 (46.08)***	0.020 (15.45)***	0.050	0.067 (62.89)***	0.026 (10.99)***	0.026	4590
1996	0.053 (43.91)***	0.023 (19.79)***	0.079	0.063 (65.33)***	0.021 (14.87)***	0.046	4544
1995	0.053 (45.99)***	0.020 (20.74)***	0.088	0.059 (57.29)***	0.027 (17.04)***	0.061	4439
1994	0.043 (35.78)***	0.026 (25.85)***	0.129	0.05 (40.52)***	0.037 (18.69)***	0.072	4503
1993	0.048 (38.14)***	0.028 (25.43)***	0.126	0.056 (44.79)***	0.039 (18.99)***	0.074	4489
1992	0.041 (27.73)***	0.027 (20.57)***	0.087	0.042 (28.77)***	0.037 (20.38)***	0.086	4437
1991	0.036 (22.29)***	0.031 (21.99)***	0.100	0.043 (27.05)***	0.034 (17.61)***	0.067	4357
1990	0.035 (20.00)***	0.033 (20.86)***	0.092	0.047 (28.44)***	0.026 (13.99)***	0.044	4287
1989	0.039 (25.59)***	0.025 (17.87)***	0.070	0.049 (35.32)***	0.017 (11.97)***	0.038	4222
1988	0.039 (24.17)***	0.023 (15.60)***	0.057	0.048 (31.53)***	0.016 (11.29)***	0.031	4015
1987	0.037 (23.05)***	0.024 (16.90)***	0.068	0.048 (32.75)***	0.016 (10.88)**	0.029	3929
1986	0.057 (42.63)***	0.017 (14.19)***	0.050	0.065 (49.90)***	0.011 (8.33)***	0.018	3835
1985	0.045 (40.69)***	0.012 (12.06)***	0.037	0.051 (45.47)***	0.007 (6.96)***	0.013	3770
1984	0.045 (38.79)***	0.008 (7.27)***	0.015	0.05 (43.15)***	0.003 (2.67)***	0.002	3605
1983	0.053 (45.93)***	0.011 (10.23)***	0.030	0.057 (50.04)***	0.007 (6.87)***	0.014	3414
1995- 1998	0.058 (88.77)***	0.020 (32.61)***	0.061	0.063 (113.76)***	0.023 (29.25)***	0.050	16,291
1991- 1994	0.042 (61.55)***	0.028 (46.34)**	0.108	0.054 (82.29)***	0.027 (29.93)***	0.048	17,786
1987- 1990	0.038 (46.83)***	0.026 (35.09)***	0.070	0.051 (68.49)***	0.016 (21.31)***	0.027	16,453
1983- 1986	0.049 (79.50)***	0.013 (22.82)***	0.034	0.057 (92.38)***	0.006 (10.27)***	0.007	14,624
1983- 1998	0.049 (138.64)***	0.020 (64.27)***	0.059	0.065 (215.79)***	0.006 (18.81)***	0.005	65,154

***Significant at the 0.01 level.

Table III. Impact of Foreign Sales

The table displays the results of our analysis of the average absolute risk premium differences for individual firms for four groups, sorted by the ratio of foreign sales to total sales. The average ratio of foreign-to-total sales for the HIGH (MEDIUM, LOW) Foreign Sales Group is 53% (28%, 7%), respectively. Each group shows three columns, the average absolute differences between the *ex ante* estimates and those of the DCAPM (*Ex*-D), the average absolute differences between the *ex ante* estimates and those of the GCAPM (*Ex*-G), and the percentage of cases in which the *ex ante* estimate is closer to the DCAPM estimate than to GCAPM estimate (%DCAPM Closer). The numbers in parenthesis are corresponding *t*-statistics.

	High Foreign Sales			Medium Foreign Sales		
Year	***Ex*-D**	***Ex*-G**	**%DCAPM Closer**	***Ex*-D**	***Ex*-G**	**%DCAPM Closer**
1983	0.025	0.029	0.707(9.76)***	0.029	0.031	0.585(3.73)***
1984	0.021	0.024	0.723(10.69)***	0.027	0.028	0.620(5.36)***
1985	0.021	0.023	0.571(3.14)***	0.027	0.027	0.513(0.58)
1986	0.023	0.026	0.613(5.14)***	0.028	0.029	0.517(0.72)
1987	0.021	0.022	0.605(4.75)***	0.027	0.029	0.574(3.47)***
1988	0.023	0.024	0.561(2.76)***	0.027	0.028	0.560(2.84)***
1989	0.023	0.024	0.571(3.30)***	0.026	0.028	0.555(2.65)***
1990	0.024	0.024	0.476(-1.12)	0.028	0.027	0.519(0.89)
1991	0.031	0.030	0.443(-2.71)***	0.028	0.028	0.549(2.33)**
1992	0.029	0.026	0.353(-7.38)***	0.029	0.029	0.487(-0.62)
1993	0.028	0.024	0.405(-4.74)***	0.032	0.030	0.525(1.22)
1994	0.024	0.020	0.409(-4.55)***	0.027	0.024	0.499(-0.04)
1995	0.027	0.028	0.464(-1.79)*	0.026	0.029	0.544(2.058)**
1996	0.022	0.032	0.664(8.50)***	0.025	0.040	0.702(10.42)***
1997	0.025	0.037	0.664(8.57)***	0.025	0.047	0.788(16.91)***
1998	0.026	0.034	0.627(5.28)***	0.029	0.041	0.749(11.44)***
Average	0.025	0.027	0.546(8.55)***	0.028	0.031	0.578(14.51)***
	Low Foreign Sales			**Zero Foreign Sales**		
Year	***Ex*-D**	***Ex*-G**	**%DCAPM Closer**	***Ex*-D**	***Ex*-G**	**%DCAPM Closer**
1983	0.036	0.036	0.499(-0.04)	0.027	0.029	0.518(0.88)
1984	0.029	0.028	0.530(1.27)	0.025	0.026	0.54(2.01)**
1985	0.028	0.030	0.639(6.31)***	0.029	0.031	0.585(4.48)***
1986	0.032	0.032	0.532(1.41)	0.028	0.032	0.649(8.11)***
1987	0.027	0.027	0.579(3.59)***	0.026	0.031	0.682(10.27)***
1988	0.025	0.026	0.511(0.49)	0.024	0.027	0.611(6.01)***
1989	0.026	0.027	0.579(3.82)***	0.022	0.024	0.579(4.19)***
1990	0.027	0.028	0.559(2.80)***	0.026	0.027	0.482(-0.97)
1991	0.025	0.027	0.533(1.59)	0.026	0.025	0.414(-4.66)***
1992	0.029	0.030	0.526(1.24)	0.026	0.025	0.484(-0.85)
1993	0.030	0.031	0.542(2.04)**	0.026	0.032	0.551(2.80)***
1994	0.025	0.024	0.503(0.17)	0.024	0.029	0.57(3.92)***
1995	0.026	0.027	0.506(0.29)	0.031	0.036	0.634(7.55)***
1996	0.026	0.027	0.554(2.66)***	0.033	0.040	0.611(6.19)***
1997	0.027	0.031	0.557(2.80)***	0.034	0.038	0.534(1.89)*
1998	0.030	0.032	0.512(0.49)	0.033	0.033	0.526(1.22)
Average	0.028	0.029	0.541(7.67)***	0.027	0.030	0.561(12.99)***

***Significant at the 0.01 level.
**Significant at the 0.05 level.
*Significant at the 0.10 level.

Table IV. Risk Premium Estimates and Differences by Industry

The table shows the breakdown of the full-period risk premium estimates by broad industry groups. The reported results weight each firm in the industry equally. Columns two to nine, respectively, show the total number observations (#Obs), the average *ex ante* risk premia (*Ex Ante*), the average domestic beta estimates (β_{iD}), the average global beta estimates (β_{iG}), the average DCAPM industry risk premium estimate (RP_D), the average GCAPM industry risk premium estimate (RP_G), the average absolute differences between the *ex ante* estimates and those of the DCAPM (*Ex*-D), and the average absolute differences between the *ex ante* estimates and those of the GCAPM (*Ex*-G), and the percentage of cases in which the *ex ante* estimate is closer to the DCAPM estimate than to GCAPM estimate (%DCAPM Closer). The numbers in parenthesis are the corresponding *t*-statistics. Rows in italics indicate *Ex*-G lower than *Ex*-D.

Industry	#Obs	*Ex Ante*	β_{iD}	β_{iG}	RP_D	RP_G	*Ex*-D	*Ex*-G	%DCAPM Closer
Aero	738	6.63	1.15	0.90	7.86	7.97	0.031	0.033	0.52(0.96)
Autos	1546	5.29	1.15	0.89	7.94	7.69	0.033	0.037	0.54(3.52)***
Banks	4004	7.16	1.21	0.85	8.58	7.96	0.027	0.026	0.49(-0.82)
Beer	1264	6.60	0.87	0.69	6.07	6.25	0.024	0.028	0.64(10.25)***
BldMt	1298	6.84	1.27	1.01	8.74	8.51	0.026	0.029	0.64(10.84)***
Books	1291	7.64	1.07	0.80	7.37	6.86	0.021	0.023	0.52(1.48)
Boxes	626	8.39	1.04	0.85	7.15	7.27	0.027	0.029	0.52(1.04)
BusSv	1374	8.15	1.07	0.82	7.49	7.24	0.023	0.028	0.60(7.77)***
Chems	2451	6.49	1.16	0.94	7.99	8.14	0.024	0.026	0.57(7.50)***
Chips	1414	8.11	1.28	0.96	8.93	8.53	0.026	0.028	0.57(5.70)***
Clths	562	7.74	1.37	0.93	9.69	8.74	0.030	0.030	0.47(-1.44)
Cnstr	*989*	*7.70*	*1.54*	*1.18*	*10.68*	*10.33*	*0.046*	*0.039*	*0.39(-7.14)****
Comps	*1281*	*9.42*	*1.19*	*0.90*	*8.31*	*8.09*	*0.032*	*0.037*	*0.53(2.27)***
Drugs	2098	8.29	0.99	0.78	6.91	7.09	0.023	0.023	0.50(0.00)
ElcEq	1246	6.89	1.08	0.89	7.46	7.63	0.017	0.019	0.55(3.65)***
Energy	3487	6.29	0.88	0.87	5.99	7.63	0.032	0.035	0.57(8.12)***
Fin	657	8.38	1.76	1.13	12.87	11.89	0.056	0.053	0.49(-0.74)
Food	*2588*	*7.02*	*0.86*	*0.65*	*5.99*	*5.77*	*0.019*	*0.025*	*0.69(20.71)****
Fun	183	9.98	1.19	0.95	8.25	8.40	0.020	0.018	0.33(-4.78)***
Gold	588	4.59	0.57	0.85	3.76	7.48	0.050	0.051	0.61(5.50)***
Hlth	432	10.4	1.29	1.05	8.99	9.83	0.026	0.024	0.49(-0.48)
Hshld	2368	6.77	1.02	0.77	7.10	6.92	0.021	0.022	0.51(1.11)
Insur	4992	7.46	1.03	0.72	7.23	6.45	0.024	0.024	0.51(1.95)*
LabEq	1280	7.31	1.10	0.92	7.48	7.92	0.020	0.020	0.48(-1.40)
Mach	*2683*	*7.32*	*1.20*	*0.98*	*8.36*	*8.86*	*0.027*	*0.032*	*0.57(7.75)****
Meals	561	7.98	1.06	0.79	7.35	7.18	0.024	0.028	0.63(6.53)***
MedEq	1334	8.80	1.03	0.77	7.18	6.86	0.029	0.032	0.52(1.70)*
Paper	2969	6.14	1.13	0.89	7.79	7.59	0.024	0.025	0.59(9.48)***
PerSv	453	9.12	0.95	0.76	6.61	6.95	0.028	0.028	0.58(3.28)***
Retail	*4380*	*9.27*	*1.12*	*0.76*	*7.74*	*6.65*	*0.031*	*0.038*	*0.62(16.24)****
Rubber	524	7.06	1.22	0.88	8.55	8.14	0.025	0.027	0.55(2.19)**
Ships	187	1.95	0.95	0.65	6.39	4.75	0.046	0.041	0.27(-6.98)***
Stee	1510	4.96	1.13	0.97	7.76	8.18	0.041	0.044	0.61(8.92)***
Telcm	1553	6.12	0.83	0.61	5.91	6.08	0.020	0.023	0.56(4.42)***
Toys	*447*	*7.42*	*1.24*	*0.93*	*8.70*	*8.54*	*0.028*	*0.035*	*0.69(8.63)****
Trans	1651	5.70	1.14	0.87	7.90	7.67	0.029	0.031	0.50(0.37)
Txtls	374	6.52	0.95	0.74	6.50	6.53	0.022	0.024	0.58(3.14)***
Util	6189	4.15	0.57	0.48	3.95	4.38	0.017	0.019	0.57(10.79)***
Whlsl	1582	8.29	0.92	0.75	6.41	6.77	0.028	0.025	0.45(-4.40)***

***Significant at the 0.01 level.
**Significant at the 0.05 level.
*Significant at the 0.10 level.

with value weighting. Also, the DCAPM industry risk premium estimates with the CRSP Value-Weighted Index are very close to the estimates we report for the S&P 500 Index.

Since the DCAPM provides the better overall fit, the DCAPM will have the better fit for many industries. The GCAPM provides a slightly better fit for a few of the industry groups, Banks, Construction, Finance, Health, and Wholesale. For industry groups such as Computers, Food, Machines, Retail, and Toys, the DCAPM provides a significantly better overall fit with the *ex ante* estimates than does the GCAPM.

E. Further Analysis of Industry Risk Premium Estimates

Table V reports the results of cross-section regressions using the industry risk premium estimates for the period 1983-1998, and estimates obtained from other approaches by Fama and French (1997) and Gebhardt et al. (2001). We excluded the Ships and Fun industries, which only had one firm each in our sample.

The most striking result in Table V is that the *ex ante* industry risk premium estimates have an r-square of 31.6% (a correlation of about 0.56) with the Fama-French DCAPM estimates. The Fama-French DCAPM industry estimates even outperform our own DCAPM industry estimates in explaining our *ex ante* industry estimates, even though the Fama-French time span is different, 1963-1994. Perhaps the explanation has to do with investors using more than five years of realized returns as the basis for expectations, or viewing the one-month Treasury bill (used by Fama and French) as the risk-free security instead of the 20-year T-bond used in this study. Both of the DCAPM industry estimates outperform the GCAPM industry estimates.

The r-square of the *ex ante* industry risk premium estimates and the Fama-French (1997) industry risk premium estimates for the 3-Factor Model is only 5.79% (a correlation coefficient of 0.24). Thus, the *ex ante* industry risk premium estimates have a much better fit with the Fama-French DCAPM industry estimates than with those of the 3-Factor Model. This finding is consistent with similar findings reported by Kaplan and Ruback (1995) and Brav et al. (2003). The results with the CRSP Value-Weighted Index as the DCAPM benchmark are very close to those reported with the S&P 500 Index.

Gebhardt et al. (2001) determined their *ex ante* risk premium estimates by using the residual income model from the full period 1979-1995, with the ten-year T-bond serving as the risk-free security. The Gebhardt-Lee-Swaminathan industry risk premium estimates have a very low correlation with our DCAPM and GCAPM estimates, with the Fama-French (1997) DCAPM and 3-Factor Model estimates, and with our *ex ante* industry estimates.

IV. Conclusion

We compare *ex ante* expected return estimates, which are implicit in share prices, analysts' growth forecasts, and the dividend growth model, with expected return estimates from the global CAPM and the domestic (US) CAPM. We use the MSCI World Index as the market benchmark for computing betas for the global CAPM, and both the S&P 500 Index and the CRSP Value-Weighted Index as the market benchmark for computing betas for the domestic CAPM. Our sample comprises S&P 500 companies over the period 1983-1998. We find that the domestic CAPM has a better fit with the dispersion of *ex ante* expected return estimates, overall and for all subsamples, based on the ratio of foreign sales to total sales. We observe no trend in this fit over time. While the domestic model provides a better fit of our data, the relatively small empirical difference between the models suggests that for estimating the

Table V. Cross-Section Regressions with Industry Risk Premium Estimates

Panel A displays the results of cross-section regressions. We use our industry *ex ante* risk premium estimates for the period 1983-1998 compared to industry average risk premium estimates from the DCAPM, the GCAPM, and estimates reported in Fama and French (1997) and Gebhardt, Lee, and Swaminathan (2001). Panel B shows the results of cross-section regressions using the Gebhardt, Lee, and Swaminathan (2001) *ex ante* risk premium estimates (from the residual income model for the overall time period 1979-1995) compared to industry average risk premium estimates from the DCAPM, the GCAPM, and estimates reported in Fama and French (1997). The numbers in parenthesis are the corresponding *t*-statistics.

Panel A. Dependent Variable: Ex Ante Industry Risk Premium Estimate			
Independent Variable	**Intercept**	**Slope**	**R- Square**
Industry Risk Premium Estimates:			
--Our DCAPM	4.442(4.51)***	0.370(2.92)***	19.58%
--GCAPM	4.775(3.73)***	0.325(1.96)**	9.99%
--Our Fama-French DCAPM	2.861(2.58)***	0.773(4.02)***	31.60%
--Fama-French 3-Factor	8.218(11.86)***	-0.154(-1.47)	5.79%
--Gebhardt-Lee-Swaminathan	7.241(17.03)***	0.005(0.04)	0.00%
Panel B. Dependent Variable: Industry Risk Premium Estimate of Gebhardt-Lee-Swaminathan			
Industry Risk Premium Estimates:			
-- Our DCAPM	0.863(0.65)	0.237(1.38)	5.13%
-- Our GCAPM	2.287(1.36)	0.050(0.23)	0.15%
-- Fama-French DCAPM	1.305(0.79)	0.240(0.83)	1.93%
-- Fama-French 3-Factor	1.343(1.56)	0.212(1.62)	6.97%

***Significant at the 0.01 level.
**Significant at the 0.05 level.

cost of equity, the choice between the domestic and global CAPM may not be a material issue for many large US firms.

The consistently better performance of the domestic CAPM surprises us, given the extensive integration in the world financial markets and arguments for the global CAPM over the domestic CAPM. Perhaps the explanation is that US practitioners apply the domestic CAPM, as suggested in standard textbooks when they should be using the global CAPM. An alternative explanation is that US practitioners believe a domestic market index is a better benchmark for their investment decisions than is a global index. By extending our study to smaller US companies and to non-US companies, we might be able to shed more light on this question. We leave this possibility to future research.

We also find significant and consistently positive associations between our *ex ante* risk premium and beta estimates. These findings are consistent with the reports in a number of other studies that use *ex ante* return estimates.■

References

Agmon, T. and D.R. Lessard, 1977, "Investor Recognition of Corporate International Diversification," *Journal of Finance* 32, 1049-1055.

Black, F., 1993, "Estimating Expected Return," *Financial Analysts Journal* 49, September-October, 36-38.

Brav, A., R. Lehavy, and R. Michaely, 2003, "Expected Return and Asset Pricing," Duke University, University of Michigan, and Cornell University Working Paper.

Bruner, R.F., K.M. Eades, R.S. Harris, and R.C. Higgins, 1998, "Best Practices in Estimating the Cost of Capital: Survey and Synthesis," *Financial Practice and Education* 8, 13-28.

Campbell, J.Y., 1996, "Understanding Risk and Return," *Journal of Political Economy* 104, 298-344.

Christophe, S.E. and R.W. McEnally, 2000, "US Multinationals as Vehicles for International Diversification," *Journal of Investing* 9, 67-75.

Claus, J. and J. Thomas, 2001, "Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets," *Journal of Finance* 56, 1629-1666.

Constantinides, G.M., 2002, "Rational Asset Prices," *Journal of Finance* 57, 1567-1591.

Cooper, I.A. and E.C. Kaplanis, 2000, "Partially Segmented International Capital Markets and International Capital Budgeting," *Journal of International Money and Finance* 19, 309-329

Diermeier, J. and B. Solnik, 2001, "Global Pricing of Equity," *Financial Analysts Journal* 57, 37-47.

Doidge, C., J.M. Griffin, and R. Williamson, 2002, "Does Exchange Rate Exposure Matter?" Arizona State University Working Paper.

Elton, E.J., 1999, "Expected Return, Realized Return, and Asset Pricing Tests," *Journal of Finance* 54, 1199-1220.

Fama, E.F. and K.R. French, 1997, "Industry Costs of Equity," *Journal of Financial Economics* 43, 153-193.

Fama, E.F. and K.R. French, 2002, "The Equity Premium," *Journal of Finance* 57, 637-659.

Fatemi, A.M., 1984, "Shareholder Benefits from Corporate International Diversification," *Journal of Finance* 39, 1325-1344.

Gebhardt, W.R., C. Lee, and B. Swaminathan, 2001, "Towards an Implied Cost of Capital," *Journal of Accounting Research* 39, 135-176.

Gode, D.K. and P. Mohanram, 2003, "Inferring the Cost of Capital Using the Ohlson-Juettner Model," *Review of Accounting Studies* 8, (Forthcoming).

Gordon, J.R. and M.J. Gordon, 1997, "The Finite Horizon Expected Return Model," *Financial Analysts Journal* 53, 52-61.

Graham, J.R. and C.R. Harvey, 2001, "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics* 60, 187-243.

Grauer, F.L.A., R.H. Litzenberger, and R.E. Stehle, 1976, "Sharing Rules and Equilibrium in an International Capital Market Under Uncertainty," *Journal of Financial Economics* 3, 233-256.

Griffin, J.M., 2002, "Are the Fama and French Factors Global or Country Specific?" *Review of Financial Studies* 15, 783-803.

Harris, R.S. and F.C. Marston, 1992, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management* 21, 63-70.

Harris, R.S. and F.C. Marston, 2001, "The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts," *Journal of Applied Finance* 11, 6-16.

Harvey, C.R., 1991, "The World Price of Covariance Risk," *Journal of Finance* 46, 111-157.

Hughes, J.S., D.E. Logue, and R.J. Sweeney, 1975, "Corporate International Diversification and Market Assigned Measures of Risk and Diversification," *Journal of Financial and Quantitative Analysis* 10, 627-637.

Jacquillat, B. and B. Solnik, 1978, "Multinationals are Poor Tools for International Diversification," *Journal of Portfolio Management* 4, 8-12.

Jorion, P., 1990, "The Exchange-Rate Exposure of US Multinationals," *Journal of Business* 63, 331-345.

Kaplan, P.D. and J.D. Peterson, "Full-Information Industry Betas," *Financial Management* 27, 85-93.

Kaplan, S.N. and R.S. Ruback, 1995, "The Valuation of Cash Flow Forecasts: An Empirical Analysis," *Journal of Finance* 50, 1059-1093.

Karolyi, G.A. and R.M. Stulz, 2003, "Are Financial Assets Priced Locally or Globally?" in G.M. Constantinides, M. Harris, and R.M. Stulz, Eds., *Handbook of the Economics of Finance*, Amsterdam, North-Holland (Forthcoming).

La Porta, R., 1996, "Expectations and the Cross-Section of Stock Returns," *Journal of Finance* 51, 1715-1742.

Lee, C.M.C., J. Myers, and B. Swaminathan, 1999, "What is the Intrinsic Value of the Dow?" *Journal of Finance* 54, 1693-1741.

Marston, F.C. and R.S. Harris, 1993, "Risk and Return: A Revisit Using Expected Returns," *Financial Review* 28, 117-137.

Miller, K.D. and J.L. Reuer, 1998, "Firm Strategy and Economic Exposure to Foreign Exchange Rate Movements," *Journal of International Business Studies* 29, 493-514.

Ng, D.T., 2003, "The International CAPM When Expected Returns Are Time-Varying," *Journal of International Money and Finance* 23, (Forthcoming).

Ohlson, J.A. and B.E. Juettner-Nauroth, 2000, "Expected EPS and EPS Growth as Determinants of Value," New York University Working Paper.

Ross, S.A. and M. Walsh, 1983, "A Simple Approach to the Pricing of Risky Assets with Uncertain Exchange Rates," in R.G. Hawkins, R.M. Levich, and C.G. Wihlborg, Eds., *Research in International Business and Finance* 3, Greenwich, CT, JAI Press, 39-54.

Ruback, R.S., 2002, "Capital Cash Flows: A Simple Approach to Valuing Risky Cash Flows," *Financial Management* 31, 85-103.

Stehle, R.M., 1977, "An Empirical Test of the Alternative Hypotheses of National and International Pricing of Risky Assets," *Journal of Finance* 32, 493-502.

Stulz, R.M., 1995a, "The Cost of Capital in Internationally Integrated Markets: The Case of Nestlé," *European Financial Management* 1, 11-22.

Stulz, R.M., 1995b, "Globalization of Capital Markets and the Cost of Capital: The Case of Nestlé," *Journal of Applied Corporate Finance* 8, 30-38.

Stulz, R.M., 1995c, "International Asset Pricing: An Integrative Survey," in R. Jarrow, M. Maximovich, and W. Ziemba, Eds., *Handbook of Modern Finance*, Amsterdam, North Holland-Elsevier, 201-223.

Stulz, R.M., 1999, "Globalization, Corporate Finance, and the Cost of Capital," *Journal of Applied Corporate Finance* 12, 8-25.

Timme, S.G. and P.C. Eisemann, 1989, "On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities," *Financial Management* 18, 23-35.